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## 200 GHz WAVEGUIDE BASED SUBHARMONIC MIXERS WITH PLANAR SCHOTTKY DIODES: RECENT PROGRESS

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### ABSTRACT:

Extremely sensitive subharmonic mixers have been developed that utilize planar Schottky diodes completely integrated with the appropriate circuitry on a quartz substrate. The successful demonstration of these low noise mixers relied on several new technologies such as the development of the QUID (Quartz substrate Up-side-down Integrated Device) process and the successful use of '1-gate like structures for low parasitic Schottky contacts. Based on these technologies, 200 GHz subharmonic mixers measured in our lab have demonstrated better performance than any previously reported whisker contacted or planar Schottky diode subharmonic mixer at comparable frequency. In fact, the achieved noise sensitivity is only about 1.5 times worse than the best ever fundamental mixers at this frequency. This paper will discuss the newly developed technologies along with recently obtained results.